Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors

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NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

RIN 3150-AF00

Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to provide a performance-based option for leakage-rate testing of containments of light-water-cooled nuclear power plants. This option is available for voluntary adoption by licensees in lieu of compliance with the prescriptive requirements contained in the current regulation. This action improves the focus of the regulations by eliminating prescriptive requirements that are marginal to safety. The final rule allows test intervals to be based on system and component performance and provides licensees greater flexibility for cost-effective implementation methods of regulatory safety objectives.

EFFECTIVE DATE: October 26, 1995.

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SUPPLEMENTARY INFORMATION:

Background--Development of Proposed Rule

NRC's Marginal-to-Safety Program

In 1984, the NRC staff initiated a program to make regulatory requirements more efficient by eliminating those with marginal impact on safety. The NRC's initiative to eliminate requirements marginal to safety recognizes both the dynamic nature of the regulatory process and that the importance and safety contribution of some existing regulatory requirements may not have been accurately predicted when adopted or may have diminished with time. The availability of new technical information and methods justify a review and modification of existing requirements.

The NRC solicited comments from industry on specific regulatory requirements and associated regulatory positions that needed reevaluation. The Atomic Industrial Forum conducted a survey providing most of industry's input, published for the NRC as NUREG/CR-4330 <SUP>1, ``Review of Light Water Reactor Regulatory Requirements,'' Vol. 1, April 1986. A list of 45 candidates for potential regulatory modification were identified. The NRC's review of the list selected Appendix J as one of seven areas requiring further analysis (NUREG/CR-

4330, Vols. 2 and 3, dated June 1986 and May 1987). The NRC also conducted a survey of its staff on the same issue. The NRC staff survey identified 54 candidates for regulatory modification, a number of which were previously identified in the industry survey. The NRC's assessment of this list also selected Appendix J as a potential candidate for modification.

\1\ Copies of NUREGs may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P. O. Box 37082, Washington, DC 20013-7082. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is available for inspection and/or copying in the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC.

The NRC published in the Federal Register, for comment, a proposed revision to Appendix J on October 29, 1986 (51 FR 39538) to update acceptance criteria and test methods based on experience in applying the existing requirements and advances in containment leak testing methods, to resolve interpretive questions, and to reduce the number of exemption requests. This proposed rule was withdrawn from further consideration and superseded with a more comprehensive revision of Appendix J.

The NRC published a notice in the Federal Register on February 4, 1992 (57 FR 4166), presenting its conclusion that Appendix J was a candidate whose requirements may be relaxed or eliminated based on cost-benefit considerations. On the basis of NRC staff analyses of public comments on the proposal, the Commission approved and announced on November 24, 1992 (57 FR 55156) its plans to initiate rulemaking for developing a performance-oriented and risk-based regulation for containment leakage-testing requirements. On January 27, 1993, (58 FR 6196) the NRC staff published a general framework for developing performance-oriented and risk-based regulations and, at a public workshop on April 27 and 28, 1993, invited discussions of specific proposals for modifying containment leakage-testing requirements. Industry and public comments on the proposals, and other recommendations and innovative ideas raised at the public workshop, were documented in the proceedings of the workshop (NUREG/CP-0129, September 1993). Specifically, the NRC concluded that the allowable containment leakage rate utilized in containment testing may be increased and other Appendix J requirements need not be as prescriptive as the current requirements. To increase flexibility, the detailed and

prescriptive technical requirements contained in Appendix J regulations could be improved and replaced with performance-based requirements and supporting regulatory guides. The regulatory guides would allow alternative approaches, although compliance with existing regulatory requirements would continue to be acceptable. The performance-based requirements would reward superior operating practices.

The present rulemaking is part of this overall effort and initiative for eliminating requirements that are marginal to safety and is guided by the policies, framework and criteria for the

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program. A more comprehensive proposed rule than that proposed in 1986 that accounts for the latest technical information and regulatory framework, using performance-oriented and risk-based approaches, was published by the NRC in the Federal Register on February 21, 1995. The public comment period for the proposed rule closed May 8, 1995.

NRC's Regulatory Improvement Program

The NRC's marginal-to-safety initiative is part of a broader NRC initiative for regulatory improvement. Through its Program for Regulatory Improvement, the NRC has institutionalized an ongoing effort to eliminate requirements marginal to safety and to reduce the regulatory burden on its licensees. The NRC staff's plan, summarized in SECY-94-090, dated March 31, 1994, satisfies the requirement for a periodic review of existing regulations given in Executive Order 12866 of September 30, 1993. This plan was approved by the Commission on May 18, 1994. The Regulatory Improvement Program is aimed at the fundamental principle adopted by the Commission that all regulatory burdens must be justified and that its regulatory process must be efficient. In practice, this means the elimination or modification of requirements for which burdens are not commensurate with their safety significance. The activities of the Regulatory Improvement Program should result in enhanced regulatory focus in areas that are more safety significant. As a result, an overall net increase in safety is expected from the program.

The Regulatory Improvement Program will include, whenever feasible and appropriate, the consideration of performance-oriented and riskbased approaches. The program will review requirements or license conditions that are identified as a significant burden on licensees. If review and analysis find that the requirements are marginal to safety, they will be eliminated or relaxed. By performance-oriented, the NRC

means establishing regulatory objectives without prescribing the methods or hardware necessary to accomplish the objective, and allowing licensees the flexibility to propose cost-effective methods for implementation. By risk-based, the NRC means regulatory approaches that use probabilistic risk analysis (PRA) as the systematic framework for developing or modifying requirements.

In institutionalizing the Regulatory Improvement Program and adopting a performance-based regulatory approach, the NRC has formulated the following framework for revisions to its regulations:

(1) The new performance-based regulation will be less prescriptive and will allow licensees the flexibility to adopt cost-effective methods for implementing the safety objectives of the original rule.

(2) The regulatory safety objectives will be derived, to the extent feasible and practical, from risk considerations with appropriate consideration of uncertainties, and will be consistent with the NRC's Safety Goals.

(3) Detailed technical methods for measuring or judging the acceptability of a licensee's performance relative to the regulatory safety objectives will be, to the extent practical, provided in industry standards and guidance documents which are endorsed in NRC regulatory guides.

(4) The new regulation will be optional for current licensees so that licensees can decide to remain in compliance with current regulations.

(5) The regulation will be supported by necessary modifications to, or development of, the full body of regulatory practice including, for example, standard review plans, inspection procedures, guides, and other regulatory documents.

(6) The new regulation will be formulated to provide incentives for innovations leading to improvements in safety through better design, construction, operating, or maintenance practices.

Current Appendix J Requirements

Appendix J to 10 CFR Part 50, ``Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors,'' became effective on March 16, 1973. The regulatory safety objective of reactor containment design is stated in 10 CFR Part 50, Appendix A, ``General Design Criteria for Nuclear Power Plants,'' Criterion No. 16, ``Containment Design.'' GDC Criterion 16 mandates ``an essentially leak-tight barrier against the

uncontrolled release of radioactivity to the environment * * *'' for postulated accidents. Appendix J to 10 CFR Part 50 implements, in part, General Design Criterion No. 16 and specifies containment leakagetesting requirements, including the types of tests required. For each type of test required, Appendix J specifies how the tests should be conducted, the frequency of testing, and reporting requirements. Appendix J requires the following types of containment leak tests:

(1) Measurement of the containment integrated leakage rate (Type A tests, often referred to as ILRTs).

(2) Measurement of the leakage rate across each pressure-containing or leakage-limiting boundary for various primary reactor containment penetrations (Type B tests).

(3) Measurement of the containment isolation valves leakage rates (Type C tests).

Type B and C tests are referred to as local leakage-rate tests (LLRTs).

Leak-Tightness Requirements

Compliance with 10 CFR Part 50, Appendix J, requirements is determined by comparing the measured containment leakage rate with the maximum allowable leakage rate. Maximum allowable leakage rates are calculated in accordance with 10 CFR Part 100, ``Reactor Site Criteria,'' and are incorporated into the technical specifications. Typical allowable leakage rates are 0.1 percent of containment volume per day for pressurized water reactors (PWRs) and one volume percent per day for boiling water reactors (BWRs).

Test Frequency Requirements

Schedules for conducting containment leakage-rate tests are specified in Appendix J for both preoperational and periodic tests. Periodic leakage-rate test schedules are as follows:

Type A Tests

(1) After the preoperational leakage-rate test, a set of three Type A tests must be performed at approximately equal intervals during each 10-year service period. The third test of each set must be conducted when the plant is shut down for the 10-year plant in-service inspection.

(2) The performance of Type A tests must be limited to periods when the plant facility is nonoperational and secured in the shutdown condition under administrative control and in accordance with the safety procedures defined in the license.

(3) If any periodic Type A test fails to meet the applicable acceptance criteria, the test schedule applicable to subsequent Type A tests will be reviewed and approved by the Commission. If two consecutive periodic Type A tests fail to meet the applicable acceptance criteria, a Type A test must be performed at each plant shutdown for refueling or approximately every 18 months, whichever occurs first, until two consecutive Type A tests meet the

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acceptance criteria, after which time the regular retest schedule may be resumed.

Type B Tests

(1) Except for airlocks, Type B tests must be performed during reactor shutdown for refueling, or other convenient intervals, but in no case at intervals greater than 2 years. If opened following a Type A or B test, containment penetrations subject to Type B testing must be tested prior to returning the reactor to an operating mode requiring containment integrity. For primary reactor containment penetrations employing a continuous leakage monitoring system, Type B tests, except for tests of airlocks, may be performed at every other reactor shutdown for refueling but in no case at intervals greater than 3 years.

(2) Airlocks must be tested prior to initial fuel loading and at six-month intervals thereafter. Airlocks opened during periods when containment integrity is not required by the plant's technical specifications must be tested at the end of such periods. Airlocks opened during periods when containment integrity is required by the plant's technical specifications must be tested within 3 days after being opened. For airlock doors opened more frequently than once every 3 days, the airlock must be tested at least once every 3 days during the period of frequent openings. For airlock doors having testable seals, testing the seals fulfills the 3-day test requirement. Airlock door-seal testing must not be substituted for the 6-month test of the entire airlock at not less than P<INF>a, the calculated peak containment pressure related to the design basis accident.

Type C Tests

Type C tests must be performed during each reactor shutdown for refueling, but in no case at intervals greater than 2 years.

There have been two amendments to this Appendix since 1973. The first amendment, published September 22, 1980 (45 FR 62789), modified the Type B penetration test requirements to conform to what had become accepted practice through the granting of exemptions. The second amendment, published November 15, 1988 (53 FR 45890), incorporated the Mass Point Statistical Analysis Technique as a permissible alternative to the Total Time and Point-to-Point techniques specified in Appendix J.

International Experience

A combination of Type A tests and an on-line monitoring (OLM) capability is being actively pursued in Canada and Europe, notably in France and Belgium, and is currently being considered in Sweden. OLM is used to identify a ``normal'' containment pressurization pattern and to detect deviations from that pattern. With on-line, low-pressure testing, Hydro-Quebec's Gentilly-2 station is able to monitor the change in containment leaktightness between Type A tests. The Belgians conduct a leakage test using OLM during reactor operation after each cold shutdown longer than 15 days with the objective of detecting gross leaks. The objective of the Belgian approach to Type A testing is to reduce the frequency and duration of the tests. The Type A test is conducted at a containment pressure (P<INF>t) not less than half of the peak pressure (0.5 P<INF>a). It is performed once every 10 years. In France, containment leaktightness is continuously monitored during reactor operation in all of the French PWR plants using the SEXTEN system. It is also being evaluated by the Swedes for their PWR units. Leaks may be detected during the positive or negative pressure periods in the containment by evaluating the air mass balance in the containment. Type A tests are conducted at containment peak pressure (loss-of-coolant accident pressure) before initial plant startup, during the first refueling, and thereafter every 10 years unless a degradation in containment leaktightness is detected. In that case, tests are conducted more frequently.

Further details of international approaches to containment testing are provided in NUREG-1493.

Advance Notices for Rulemaking

Over time, it has become apparent that variations in plant design and operation frequently make it difficult to meet some of the requirements contained in Appendix J because of its prescriptive

nature. Economic and occupational exposure costs are directly related to the frequency of containment testing. Containment integrated leakage-rate tests (Type A) preclude any other reactor maintenance activities and thus are on the critical path for return to service from reactor outages. In addition to the costs of the tests, integrated leak tests impose the added burden of the cost of replacement power. Containment-penetration leak tests (Type B and C) can be conducted during reactor shutdowns in parallel with other activities and thus tend to be less costly; however, the large number of penetrations impose a significant burden on the utilities. Additionally, risk assessments performed to date indicate that the allowable leakage rate from containments can be increased, and that control of containment leakage at the current low rates is not as risk significant as previously assumed.<SUP>2 3

\2\ ``Severe Accident Risks: An assessment for five U. S. Nuclear Power Plants, Final Summary Report.'' NUREG-1150, December 1990. Copies of NUREGs may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P. O. Box 37082, Washington, DC 20013/7082. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is available for inspection and/or copying in the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC.

\3\ ``Performance-Based Containment Leak Test Program,'' NUREG-1493, July 1995.

In August of 1992, the NRC initiated a rulemaking to modify Appendix J to make it less prescriptive and more performance-oriented. The Commission also initiated a plan to relax the allowable containment leakage rate used to define performance standards for containment tests. In the Federal Register of January 27, 1993 (58 FR 6196), the NRC indicated the following potential modifications to Appendix J of 10 CFR Part 50 would be considered:

(1) Increase allowable containment leakage rates based on Safety Goals and PRA technology (i.e., define a new performance standard); and

(2) Modify Appendix J to be a performance-based regulation:

A. Limit the revised rule to a new regulatory objective. In order to ensure the availability of the containment during postulated accidents, licensees should either:

(i) Test overall containment leakage at intervals not longer than every 10 years, and test pressure-containing or leakage-limiting boundaries and containment isolation valves on an interval based on the performance history of the equipment; or

(ii) Provide on-line (i.e., continuous) monitoring of containment isolation status.

B. Remove prescriptive requirements from Appendix J and preserve useful portions as guidance in an NRC regulatory guide.

C. Endorse industry standards on:

(i) Guidance for calculating plant-specific allowable leakage rates based on new NRC performance standards;

(ii) Guidance on the conduct of containment tests; and

(iii) Guidance for on-line monitoring of containment isolation status.

D. Continue to accept compliance with the current detailed requirements in Appendix J (i.e., licensees presently in compliance with Appendix J will not need to do anything if they do not wish to change their practice).

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A public workshop on the subject was held by the NRC on April 27 and 28, 1993.<SUP>4

\4\ ``Workshop on Program for Elimination of Requirements Marginal to Safety,'' NUREG/CP-0129, September 1994.

February 1995 Proposed Revision

Based on several advance notices for rulemaking and significant public comment and discussion, evaluation of risks and costs, and consideration of which modifications have become feasible and practical, in the February 21, 1995, Federal Register the NRC proposed two phases for modifications of requirements to containment leakage testing. The first phase allowed leakage-rate testing intervals to be based on the performance of the containment system structures and components. The second phase will further examine the needed requirements of the containment function (i.e. structural and leaktight

integrity of containment system structures and components, and prevention of inadvertent bypass), and include consideration of the potential for on-line monitoring of containment integrity to verify certain functions. Public comments were solicited to guide this future work.

The February 21, 1995, proposed rule applies to all NRC licensees who operate light-water-cooled power reactors. The proposed rule allows licensees the option of continuing to comply with the current Appendix J or to adopt the new performance-based standards.

The NRC's analyses are based upon the insight gained through the use of probabilistic risk assessment techniques and the significant data base of practical, hands-on operating experience gained since Appendix J was promulgated in 1973. This operating experience provides solid evidence of the activities necessary to conduct Appendix J testing, and the costs of those activities both in monetary terms and occupational radiation exposure.

The proposed rule is based on analytical efforts documented in NUREG-1493 which, like NUREG-1150, confirms previous observations of insensitivity of population risks from severe reactor accidents to containment leakage rates.

The current Appendix J requirements continue to achieve the regulatory criterion of assuring an essentially leak-tight boundary between the power reactor system and the external environment (General Design Criterion 16). Costs associated with complying with current Appendix J requirements are estimated to be $165,000 for a complete battery of Type B/C tests and $1,890,000 for Type A tests. Over the average reactor's remaining lifetime of 20 years, the present value of all remaining containment leakage testing at a 5 percent discount rate is estimated to be about $7 million per reactor. Estimates of the remaining industry-wide costs of implementing current Appendix J requirements ranged from $720 to $1,080 million, approximately 75 percent of which could be averted with a performance-based rule.

The Regulatory Analysis for the proposed rule finds that by allowing requirements to remain in effect with marginal impact on safety, but which impose a significant cost on licensees, is to have missed an opportunity to improve regulatory coherence and to focus NRC's regulations to areas where the return in terms of added public safety is higher.

Specific alternatives for modifying the current Appendix J were identified by the public in response to the NRC's Federal Register notice published on January 27, 1993 (58 FR 6196). Those whose characteristics matched the NRC's established criteria for the marginal to safety program were selected for further review.

Modifications of Advance NRC Proposal

Allowable Leakage Rate

The NRC had initially planned to establish, by rulemaking, a riskbased allowable leakage rate commensurate with its significance to total public risk. Specific findings from NUREG-1493 on the allowable leakage rate include:

1. Allowable leakage could be increased approximately two orders of magnitude (100-200 fold) with marginal impact on population dose estimates from reactor accidents.

2. Calculated risks to individuals are several orders of magnitude below the NRC's Safety Goals for all reactors considered.
3. Increases in the allowable leakage rate are estimated to have a negligible impact on occupational exposure.

Relaxing the allowable leakage rate is estimated to reduce future industry testing costs by $50 to $110 million, a 10 percent decrease overall leakage-rate testing costs.

A risk-based allowable leakage rate would be based on an evaluation, using PRA, of the sensitivity and significance of containment leakage to risk, and the determination of an appropriate containment leakage limit commensurate with its significance to the risk to the public and plant control-room operators. However, this would have entailed a major change in policy and restructuring of the current licensing basis and a more complete understanding of the uncertainties associated with the threat of severe accidents to the containment, and therefore, the NRC planned to develop a modification of the performance standard (allowable leakage level) in the second phase separate from modifications of testing requirements. This modification would be part of a broader effort to further examine the risk significance of various attributes of containment performance, i.e., structural and leak-tight integrity of containment-system structures and components, and inadvertent bypass.

On-Line Monitoring (OLM) Systems

Currently, there is no NRC requirement for systems which continuously monitor the containment to detect unintentional breaches of containment integrity.

Studies discussed in NUREG-1493, ``Performance-Based Containment Leak Test Program,'' found that, based on operating experience, OLM would not significantly reduce the risk to the public from nuclear plant operation and, thus, could not be justified solely on the basis of risk-based considerations. Specific findings include:

4. Existing continuous monitoring methods appear technically capable of detecting leaks in reactor containments within 1 day to

several weeks. OLM systems are in use or planned in several European countries and Canada.

5. OLM systems are capable of detecting leaks only in systems that are open to the containment atmosphere during normal operation (approximately 10 percent of the mechanical penetrations).
6. The technical and administrative objectives of OLM systems and Type A tests are different.

7. OLM could not be considered as a complete replacement for Type A tests because it cannot challenge the structural and leak-tight integrity of the containment system at elevated pressures.
8. Analysis of the history of operating experience indicated a limited need for, and benefit of, OLM in the U.S.

Although OLM can not be justified solely based on risk considerations, a plant already possessing such a system has a greate assurance of achieving certain attributes of containment integrity. Therefore, OLM systems could contribute towards an overall leakagemor scheme. Some capability for on-line monitoring already exists as a byproduct of specific containment designs. For example, licensees with

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inerted BWR containments, or subatmospheric PWR containments, could possibly detect gross leakages that develop during normal operation.

Given that the application of on-line monitoring is specific to containment design, and generic application can not be justified sole on risk considerations, the NRC did not propose a requirement for OLM However, licensees with such a capability (e.g. inerted BWR containments, and subatmospheric PWR containments) were encouraged to propose plant-specific application of such a capability, and to take credit for any added assurance of containment integrity provided by such a system compared to other testing methods. The NRC proposed to reconsider the role of OLM in the second phase of modifications in th area along with the allowable leakage rate.

Proposed Modification of Type A, B, and C Test Intervals

In the February 1995 proposed rule, the NRC proposed a new riskba regulation based on the performance history of components (containment, penetrations, valves) as the means to justify an increa in the interval for Type A, B, and C tests. The revised regulation requires tests to be conducted on an interval based on the performanc of the containment structure, penetrations and valves without specifying the interval in the regulation. Currently, three Type A tests are conducted in every 10 year period. Type B (except airlocks, which are tested more frequently) and C tests are conducted on a frequency not to exceed 2 years.

The NRC proposed to base the frequency of Type A tests (ILRTs) or the historical performance of the overall containment system. Specif findings documented in NUREG-1493 that justify the proposal include:

1. The fraction of leakages detected only by ILRTs is small, on th order of a few percent.

2. Reducing the frequency of ILRT testing from 3 every 10 years to 1 every 10 years leads to a marginal increase in risk.
3. ILRTs also test the strength of the containment structure. No alternative to ILRTs has been identified to provide assurance th containment structure would meet allowable leakage rates during accidents.

4. At a frequency of 1 test every 10 years, industry-wide occupational exposure would be reduced by 0.087 person-sievert (person-rem) per year.

Based on specific, detailed analyses of data from the North and Grand Gulf nuclear power plants, and data from twenty-two nu plants (see NUREG-1493), performance-based alternatives to curre methods are feasible with marginal impact on risk. Specific find include:

5. Type B and C tests are capable of detecting over 97 percent of containment leakages.

6. Of the 97 percent, virtually all leakages are identified by LLRTs of containment isolation valves (Type C tests).
7. Based on the detailed evaluation of the experience of a single two-unit station, no correlation of failures with type of valve plant service could be found.

8. For the 20 years of remaining operations, changing the Type B/C test frequency to once every 5 years for good-performing compone estimated to reduce industry-wide occupational radiation exposur 0.72 person-sievert (72 person-rem) per year. If 20-year license extension is assumed, the estimate is 0.75 person-sievert (75 pe per year.

Future industry testing costs are reduced by approximately $ $660 million if ILRT tests are conducted once every 10 years rat than the current 3 per 10 years. ILRT savings represent about 65 percent of the remaining costs of current Appendix J requirement Performance-based LLRT alternatives are estimated to reduce futu industry testing costs by $40 million to $55 million. LLRT savin represent about 5 percent of the total remaining costs of Append testing.

Therefore, based on the risks and costs evaluated, and other considerations discussed above, a performance-based Appendix J w proposed which encompassed the following principles, which diffe moderately from those first described in the Federal Register (J

27, 1993 58 FR 6197).

General (1) Make Appendix J less prescriptive and more perfo (2) Move details of Appendix J tests to a regulatory guide as guidance; (3) Endorse in a regulatory guide the industry guideli 94-01) on the conduct of containment tests (The methods for test contained in an industry standard (ANSI/ANS 56.8-1994) which is referenced in the NEI guideline); and (4) Allow voluntary adopti the new regulation, i.e., current detailed requirements in Appen will continue to be acceptable for compliance with the modified

Leakage Limits Acknowledge the less risk-significant nature allowable containment leakage but pursue its modification as a s action.

Type A Test Interval (1) Based on the limited value of integ leakage-rate tests (ILRTs) in detecting significant leakages fro penetrations and isolation valves, establish the test interval b the performance of the containment system structure; (2) The performance criterion of the test will continue to be the allowa leakage rate (La); (3) The industry guideline allows extension o Type A test interval to once every 10 years based on satisfactor performance of two previous tests, inclusive of the pre-operatio ILRT; (4) In the regulatory guide, the NRC takes exception to in guidance for the extension of the interval of the general visual inspection of the containment system, and limits the interval to times every 10 years, in accordance with current practice.

Type B & C Test Interval (1) Allow local leakage-rate test (intervals to be established based on the performance history of component; (2) The performance criterion for the tests will cont be the allowable leakage rate (La); (3) Specific performance fac for establishing extended test intervals (up to 10 years for Typ components, and 5 years for Type C components) are contained in regulatory guide and industry guideline. In the regulatory guide NRC has taken exception to the NEI guideline allowing the extens Type C test intervals up to 10 years, and limits such extensions years.

Summary of Public Comments

Twenty-six letters were received that addressed the policy, technical, and cost aspects of the proposed rulemaking, includin nine questions posed by the NRC in the February 21, 1995 propose All comments, including the ones received by the NRC after the d were considered. The commenters included 4 private citizens, 1 p interest group, 18 utilities, 1 nuclear utility industry group, regulatory agency, and 1 foreign regulator.

Although the proposed rule did not generate a significant nu public comments, the commenters did align themselves into two di groups: those who supported publishing the rule and those agains Those who supported publishing the rule comprise the vast majori the commenters (22) and included the Nuclear Energy Institute (N

which represents the nuclear utility licensees, eighteen individ nuclear power plant licensee respondents, a Spanish regulatory authority and two private citizens (Mr.

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Hill and Mr. Barkley). This group is very supportive of the Commission's risk-based regulatory program, and supports proceed with the rule in an expeditious manner, despite having reservati about three specific provisions. The issues of most concern to t group are: (1) Licensee commitments to certain requirements of t regulatory guide implementing Appendix J testing via use of the technical specifications (industry would prefer using a plant's safety analysis report); (2) requirements to conduct visual inte and external inspections of the containment on a frequency of 3 per 10 years (industry would prefer once per 10 years to coincid Type A tests); (3) making Option B of the proposed rule mandator (industry would prefer to retain the optional feature); and (4) test frequency (industry would prefer a 10-year test interval fo certain Type C valves). Industry supports a future rulemaking to increase the allowable leakage rate.

Two private citizens (Mr. Arndt and Dr. Reytblatt) are oppos the proposed rule. The issues of most concern to these citizens (1) Type A test frequency (Mr. Arndt would prefer that frequenci held at current levels); (2) Type A test methodology (Dr. Reytbl wants to halt Type A testing until the test accuracy is improved Type C test frequencies (Mr. Arndt believes the existing databas not support 10-year test intervals, and suggests 5-years as an u limit at the present time); and (4) Leakage rate (a future rulem to increase the allowable leakage rate should not be undertaken)

Two organizations are opposed to the proposed rule. The Bure Nuclear Engineering of the state of New Jersey and the Ohio Citi for Responsible Energy (OCRE, represented by Ms. Hiatt), a publi interest group, expressed skepticism in the risk-based approach regulation as embodied in the philosophy of the Marginal-to-Safe Program. The issues of most concern to this group are that: (1) Increases in public risk are not acceptable, no matter how margi and (2) A future rulemaking to increase the allowable leakage ra should not be undertaken.

NRC Position. With respect to the areas of disagreement betw NRC and those who generally support the proposed rule, no new information has been provided in the public comments that was no already addressed in ongoing dialogue. Accordingly, the NRC has made any substantive changes to its proposed regulation. Specifi

the NRC has retained: (1) Its position of requiring the use of technical specifications; (2) The intervals established for visu examinations of containment; and (3) The 5-year Type C test inte

With respect to the optional feature of the rule, the NRC ag with the industry and has retained this feature. With respect to Arndt and Dr. Reytblatt, the NRC agrees in part with Mr. Arndt a decided not to alter the LLRT test interval as noted in item (3) other issues raised by Mr. Arndt and Dr. Reytblatt contain no information that has not been considered previously in a public Therefore, the NRC has decided to make no substantive changes to proposed rule as a result of the issues raised. With respect to organizations opposed to the proposed rule (OCRE and the NJ Bure Nuclear Engineering), neither has provided new information or a compelling reason to abandon the risk-based approach to regulati

In its preliminary criteria for developing performance-based regulations, the NRC identified several issues to be addressed b rulemaking process as a measure of the viability of the revised These issues were addressed in the proposed rule and the NRC sou further public input on them. Comments were received on these to addition to other areas of interest to the public. The following summary of comments received on these issues and areas, and NRC' response. A complete discussion of all comments is included in t Public Comment Resolution Document.<SUP>5

\5\ Copies are available for inspection or copying for a fee from the NRC Public Document Room at 2120 L Street NW., Washingt DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; telephone (202) 634-3273; fax (202) 634-3343.

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1. Can the new rule and its implementation yield an equivalen level of, or would it only have a marginal impact on safety'

Twenty-four commenters addressed this issue, offering a variety of opinions. Twenty commenters believe that implemer the proposed rule will provide an equivalent level of safety provided by the current rule. A majority of commenters, rep for the most part nuclear utilities, believe that the propos regulation will reduce the testing burden currently imposed nuclear industry, and will result in more efficient use of u resources, while ensuring the health and safety of the publ believe that the practical experience gained from more than reactor-years of commercial nuclear power-plant operation p appropriate basis to adjust the Appendix J testing interval established over 20 years ago on the basis of engineering ju Further, these commenters believe that a significant reduct occupational exposures can be achieved with reduced testing

Mr. E. Gunter Arndt, a private citizen, believes that t neither sufficient objective data nor perspective to justify

containment leakage rates, decreasing test frequencies, rela
testing criteria, and reducing containment-system maintenanc
standards. Dr. Reytblatt, a private citizen, believes that
testing must be immediately suspended because the current te
methodology is flawed. Mr. Kent W. Tosch, Manager of New Je
Bureau of Nuclear Engineering, points out that the containme
extremely important barrier to a release of radioactivity, l
philosophy reflected in this rulemaking is that this barrie
allowed to become less reliable, even when some nuclear pla
showing signs of aging. Ms. Susan L. Hiatt, Director of Ohi
for Responsible Energy, notes that relaxing the frequency o
tests leads to an increase in overall reactor risk of appro
percent and, while the NRC may deem this to be marginal, it
is an increase in risk.

The NRC believes it has collected sufficient subjective
independent data to conduct its risk analysis. Detailed data
independent power plants, representing four units, data supp
NEI representing approximately 30 additional units, and app
180 ILRT and licensee event reports were analyzed. These da
consistent results. Dr. Reytblatt's views, while technicall
have been opposed by several technically competent organizat
including the American National Standards Institute, and Oa
National Laboratory because the improvements he suggests wi
insignificant effect on measured containment leakage rates
and thus have no safety significance. The NRC believes there
ample opportunity for public discussion of the basis for the
revisions.

Based on the foregoing, the NRC reaffirms its prior conc
(stated in the February 21, 1995, Federal Register notice)
safety objective for containment integrity can be maintained
the same time reducing the burden on licensees. Additionally
rule provides a greater level of worker safety than that pr
the previous rule.

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2. Can the regulatory/safety objective (qualitative or
quantitative) be established in an objective manner to allo
understanding between licensees and the NRC on how the perf
results will be measured or judged?

To avoid repetition, the NRC incorporated responses to
question with those of Question 3.

3. Can the regulation and implementation documents be d
such a manner that they can be objectively and consistently
and enforced against?

Approximately 20 commenters expressed opinions on Questi
#3. The majority of the commenters believe that regulatory/s
objectives can be established objectively, and can be consis
enforced, although opinions differ on the optimum enforcemer
mechanism. Mr. Fernando Robledo of the Spanish nuclear regu
agency states that the use of probabilistic risk assessment
regulatory process provides a more realistic and objective a
of nuclear safety, and thus supports its increased use in th
regulatory process. The NEI believes the use of technical
specifications for inspection and enforcement is neither nec
warranted and that, rather than a licensee commitment in the
technical specification, future licensee commitments to impl
Option B should be provided by documentation in the updated
Safety Analysis Report.

To assist in the common understanding of new methods of
establishing Type A, B, and C test frequencies between the N
power reactor licensees, the NRC has had ongoing discussions
licensees. These discussions included participation in works
designed to elicit a common understanding. Also, the NRC wis
retain the current practice which requires its review and ap
changes to Appendix J performance limits and surveillance re
Therefore, the NRC has required that the regulatory guide sh
specified in the technical specifications, an approach not i
with the Commission's policy on technical specifications.

Based on the foregoing, the NRC reaffirms its prior conc
(stated in the February 21, 1995, proposed rule) that it exp
its activities to date, the review and endorsement of a indu
guideline in a regulatory guide, and the general reference o
regulatory guide in plant technical specifications, will pro
common understanding on the measures of compliance.

4. Should the proposed revision be made even less prescr

Except for Mr. Hill and Mr. Barkley, commenters did not
address this question, which was directed at the possibility
reducing, even further, the testing frequency of ILRTs based
fact that there does seem to be a strong statistical link be
passing or failing successive ILRTs. Mr. Hill believes that
need to make the rule less prescriptive, and it may be infer
no desire on the part of industry to further increase the te
interval between ILRTs or to eliminate them completely. Richl
Barkley, although strongly supporting an adjustment to the t
Type A testing to once every 10 years, also discourages the
adopting a Type A surveillance interval any longer than 10 y
because of aging considerations.

The NRC has decided, in general, to maintain the present
prescriptiveness in the proposed rule and, in particular, to

decrease further the test frequency for ILRTs. The NRC's pos
guided by the desire to maintain some conservatism to addres
uncertainties and adopt an evolutionary approach wherein inc
remain for good performance.

5. Should the proposed revisions be made mandatory?

To avoid repetition, the NRC incorporated responses to t
question with those of Question 7.

6. Was the definition of ``backfit'' in Sec. 50.109(a)(1
to encompass rulemakings of the type represented by this pro

To avoid repetition, the NRC incorporated responses to t
question with those of Question 7.

7. Is it appropriate for the Commission to waive the app
of the Backfit Rule?

The majority of the 20 commenters believe that complianc
performance-based Appendix J program should not be made mand
NEI believes that rulemakings that provide relief from a cur
regulation but would also contain one or more new requiremer
the case here) would be subject to the backfit rule. These c
believe that application of the backfit rule would be neces
the NRC could promulgate the performance-based Appendix J pr
requirement, believing some licensees might select, for reas
cost, to continue to comply with the existing Appendix J.

The majority of commenters believe that the backfit rule
apply and should not be waived. Several utilities have no ob
waiving a backfit analysis when clear relief is available, b
concerned with the generic implications of waiving the appli
the backfit rule. The NEI believes that while the proposed A
revisions would provide much needed performance-based improv
the existing Appendix J, it would also impose new requiremer
the proposed rule constitutes a backfit. Further, this comme
believes that, as a matter of administrative law, an agency
authority to depart from its own rules, thus, it cannot waiv
regulations.

The NRC believes that if the rule were made mandatory, a
licensees would incur costs setting up the procedures for im
the rule's requirements following the guidance provided in t
regulatory guide and the NEI guidance document. For those ut
whose circumstances (e.g., remaining plant life) would lead
follow the current Appendix J, costs would be incurred with
additional benefit. Thus, the NRC agrees with the opinions e
the NEI and has decided to retain the proposed rule in its p
form, which provides a non-mandatory alternative to the curr

Appendix J requirements. Because the NRC has decided to reta optional feature of the proposed rule, the question of backf addressed.

8. Should NRC pursue a fundamental modification of its r in this area by establishing an allowable leakage rate based analysis (as presented in draft NUREG-1493, Chapter 5), as c the current practice of using deterministic design basis acc dose guidelines contained in 10 CFR Part 100; or should the the allowable leakage rate within the current licensing basi revising source terms and updating regulatory guides (R.G.s 1.4) <SUP>6 for calculating doses to the public? What are th advantages and disadvantages of the two approaches? What are considerations than risk to public, e.g., plant control room habitability, that might limit the allowable leakage rate?

\6\ Copies may be purchased at current rates from the Superintendent of Documents, U.S. Government Printing Office Box 37082, Washington, DC 20402-9328 (telephone 202-512-2249 512-2171); or from the National Technical Information Servic writing NTIS at Port Royal Road, Springfield, VA 22161.

The 20 commenters who responded to this question consist predominantly of the utilities endorsing the NEI position. T respondents encourages the NRC

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to pursue a rulemaking to alter allowable leakage rates usin analysis, believing that a firm technical basis exists for relaxing leakage rates up to two orders of magnitude with on marginal impact on population risk estimates. It was also su that a review of the present source terms, dose projection m associated assumptions against the revised source terms and methodologies should also be performed to determine if relie achieved while assuring public health and safety. Three comm discouraged the NRC from relaxing containment leakage rates from the opinion that little benefit would result (Mr. E. Gu to an unequivocal belief that such a move would violate a pr licensing basis by eliminating the protection provided for t public individual by the 10 CFR Part 100 siting criteria (Ms Hiatt). Ms. Susan Hiatt, representing the Ohio Citizens for Energy, believes that containment leak rates should be perio

reexamined, not for the purpose of relaxing them, but to det
whether they should be made more stringent given increasing
density around operating nuclear power plants.

The NRC has decided to continue to pursue further reduct
regulatory burden with marginal impacts on safety and will a
complexities noted in the public comments in its future effo
relax the allowable leakage rate.

9. If the allowable leakage rate is increased, could on-
monitoring of containment integrity replace other current co
tests? Could the results of the on-line monitoring be used t
a new performance basis for containment integrity involving
stringent reporting requirements if there is high assurance
no large leakage paths in containment (> 1 in. diameter).

The 18 commenters who responded to this question consist
and the utilities endorsing the NEI position, and Mr. Richar
The commenters do not believe that on-line monitoring (OLM)
containment integrity can replace many of the current contai
tests, and state that OLM systems have very limited abilitie
identify breaches in containment integrity. In the experienc
Barkley, such systems add unnecessary plant complexity and c

The NRC acknowledges the public comments rendered and wi
guided by them in decisions yet to be made regarding the Pha
effort.

10. Are there any other regulatory approaches and techni
by which the NRC can adopt a complete performance and risk b
regulations for containment leak-tight integrity? What are s
attributes for performance, and what risk-based methods can
analyze these attributes?

The NEI, speaking for all other utilities, addressed thi
by stating that it had not conducted any analyses to determi
any other regulatory approaches and technical methods by whi
can adopt a complete performance and risk basis to its regul
containment leak-tight integrity.

11. Rulemaking Documents.

Seventeen commenters expressed opinions about NRC's regu
policy decisions and/or specific language in the rule or its
documents. Mr. Hill believes that the NRC's and the NEI's gu
documents are not developed to the point of establishing a c
understanding of how to meet NRC's regulatory and safety obj
(e.g., while NEI 94-01 contains a lot of information and sol
guidance, it also contains inconsistencies, contradictions a
passages). The NEI, whose comments were endorsed by most res

licensees, proposed modifications to several of the rulemak documents, including the Federal Register notice and its ow document.

The NRC has amended its rule and accepts most of the re the implementing documents to clarify language and achieve between the rulemaking documents.

12. Technical Issues.

Testing Frequency

Twenty-four commenters expressed opinions on test freque majority were supportive of 10-year intervals for both Type tests. Regarding ILRTs, the Nuclear Energy Institute, severa individual utilities, and Mr. Howard Hill expressed views t proposed rule provides an acceptable testing frequency for Fernando Robledo, of the Spanish nuclear regulatory agency, that 10 years is too long a time interval between Type A co tests. Mr. E. Gunter Arndt's view is that a preoperational not count as one of the two successful ILRT tests required 10-year test interval because preoperational conditions are representative of operating conditions. The citizens' group, Citizens for Responsible Energy, believes the frequency of leak-rate testing should remain unchanged from the current

Several commenters also expressed opinions on the NRC's LLRT testing frequency. Mr. Fernando Robledo, while agreein with the test frequency for type B and C tests proposed in regulatory guide, believes that certain mechanical penetrat particularly important for plant safety should be leak teste months. Mr. E. Gunter Arndt's view is that the testing hist penetrations, and especially of valves, does not support le untested for 10 years and suggested that an upper limit sho every 5 years. One utility in particular, and the Nuclear E Institute in general believe that the NRC does not go far e citing that several sets of data justify 10-year LLRT inter contrast, Mr. Richard Barkley, who also endorses Type B & C frequency based on performance, strongly supports the NRC's prohibit the adoption of Type C surveillance intervals long months.

In establishing the 5-year test interval for LLRTs, the designed a cautious, evolutionary approach as data are comp minimize the uncertainty now believed to exist with respect data. The NRC's judgment, based on risk assessment and dete

analysis, continues to be that the limited database on unqua
leakages and common mode and repetitive failures introduces
uncertainties into the probabilistic risk analysis. The NRC
open to submittals from licensees as more performance-based
developed. The extension of LLRT test interval to 5 years is
first step. By allowing a 25 percent margin in testing frequ
requirements, the NRC has provided the flexibility to accomm
longer fuel cycles. With respect to the 10-year interval for
NRC believes its technical support document (NUREG-1493) is
by demonstrating that testing intervals could be increased u
every 20 years with an imperceptible increase in risk, using
ILRT data which accounted for random and plant-specific fail
plant aging effects.

Based on the foregoing discussion, the NRC has decided t
the 60-month Type C test interval and the 120-month interval
and B tests. In response to public comments, the NRC has rev
regulatory guide to limit the extension of test intervals fo
steam and feedwater isolation valves in BWRs, and containmen
vent valves in PWRs and BWRs beyond 30 months given their op
experience and/or safety significance.

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Test Pressures

Two commenters expressed opinions on the magnitude of th
used in conducting Type A leakage tests. Northern States Pow
believes that Type A testing at full pressure is unnecessary
believes that visual inspection coupled with a reduced press
will adequately assure that the containment structural membe
leak-tight, especially since reduced pressure Type A tests a
acceptable tests as prescribed in the current 10 CFR Part 50
J. Mr. E. Gunter Arndt states that while Type A tests perfor
reduced pressure rather than peak accident pressure are econ
advantageous to the industry, the results of these tests are
necessarily indicative of leakage rates during accidents.

The NRC believes that extrapolating low pressure leakage
results to full pressure leakage-test results has turned out
unsuccessful. The NRC believes that the peak calculated acci
pressure: (1) Is consistent with the typical practice for NR
evaluations of accident pressure for the first 24 hours in a
with Regulatory Guides 1.3 and 1.4; (2) Provides at least a

check for gross leak paths which might exist at high test pr
but not at low test pressures; and (3) Directly represents t
specification leakage-rate limits, and provides greater con
containment system leak-tight integrity.

Based on the foregoing, the NRC has decided to retain th
calculated design basis loss-of-coolant accident peak pressu
ILRT test pressure.

Containment Inservice Visual Inspection

Eighteen commenters expressed opinions on this issue. Th
most utilities oppose the NRC's proposal to require visual e
of containment be performed 3 times every 10 years. These co
suggest that this issue be taken up in a parallel rulemaking

The NRC finds the industry's arguments for relaxing the
of containment visual inspections to be unpersuasive. Becaus
visual examination is not integral to the ILRT (i.e., may be
independently) and because the NRC sees benefits to the earl
of unknown aging mechanisms which may be active, the NRC con
prudent to conduct visual inspections on a frequency greater
ILRT. Further, the NRC believes it is inappropriate to defer
requirement pertaining to containment structural integrity t
ongoing rulemaking to incorporate ASME Section XI, IWE and I
its form and substance is finalized.

Based on the foregoing, the NRC has decided to retain it
for the inservice visual inspection.

Reporting Requirements

Only one comment was received on this issue. Dr. Z. Reyt
that the proposed rule's reporting requirements consist only
letter to the NRC and suggested this is intended to conceal
from the public. Dr. Reytblatt suggests that utilities shou
required to submit all computer files related to testing to
immediately after the tests have been completed to prevent t
alteration or destruction.

It is not the intent of the NRC's reporting requirements
information from the public; if tests fail, the information
to be reported to the NRC, and the NRC will make such data a
the public. The NRC has decided to retain its reporting requ
stated in the proposed rule.

Modifications to the Proposed Rule in Response to Public Cor

The NRC has decided to amend its proposed rule and its documents to clarify language. The NRC has concluded that it regulatory analysis and its technical support document, NURE not require corrections to its technical or cost analyses or findings. Modifications to all documents will be restricted clarifications and enhancements to assist in communications reader, specifically in areas discussed in the public commer

The proposed rule has been modified by changing ``Accept criteria'' to ``Performance criteria'' in Section II, Defini various conforming text changes to reflect consistent use of Other similar redundant terms in the proposed rule, e.g. goa been deleted to establish clear and concise language in the

Specific changes to the draft regulatory guide, Section Regulatory Position, include (1) in paragraph number 2, the of the rationale for denying the ``3 refueling cycle'' chang in the public comments; (2) the inclusion of a new paragraph taking exception to the NEI Industry Guideline, Section 10.2 provides guidance that an as-found Type C test or an alterna or analysis (emphasis added) shall be performed prior to any maintenance, repair, modification, or adjustment activity it affect a valve's leak-tightness. ``Alternate test or analysi endorsed as appropriate substitutes for an as-found test, si latter provides clear and objective evidence of performance isolation components; and (3) limitation of the extension of intervals for main steam and feedwater isolation valves in B containment purge and vent valves in PWRs and BWRs beyond 30 given their operating experience and/or safety significance

Regulatory Guide; Issuance, Availability

The Nuclear Regulatory Commission has issued a new guide Regulatory Guide Series. This series has been developed to d make available to the public such information as methods acc the NRC staff for implementing specific parts of the Commiss regulations, techniques used by the staff in evaluating spec problems or postulated accidents, and data needed by the sta review of applications for permits and licenses.

Regulatory Guide 1.163, ``Performance-Based Containment Program,'' endorses an industry standard which contains guid on an acceptable performance-based leakage-test program, lea

test methods, procedures, and analyses that may be used to i
the final regulation published in this notice.

Comments and suggestions in connection with items for in
guides currently being developed or improvements in all publ
guides are encouraged at any time. Written comments may be s
the Rules Review and Directives Branch, Division of Freedom
Information and Publications Services, Office of Administrat
Nuclear Regulatory Commission, Washington, DC 20555. The NRC
response to public comments received on the draft version of
(DG-1037, issued in February 1995) are available for inspect
copying for a fee in the NRC Public Document Room, 2120 L St
Washington, DC.

Regulatory guides are available for inspection at the Co
Public Document Room, 2120 L Street NW., Washington, DC. Sin
of regulatory guides may be obtained free of charge by writi
Office of Administration, Attention: Distribution and Servic
U.S. Nuclear Regulatory Commission, Washington, DC 20555-000
fax at (301) 415-2260. Issued guides may also be purchased f
National Technical Information Service on a standing order b
Details on this service may be

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obtained by writing NTIS, 5285 Port Royal Road, Springfield,
Regulatory guides are not copyrighted, and Commission approv
required to reproduce them.

Implementation

The proposed Option B to Appendix J will become effectiv
after publication. At any time thereafter, a licensee or app
notify the NRC of its desire to perform containment leakage-
testing according to Option B. Accompanying this notificatio
licensee must submit proposed technical specifications chang
would eliminate those technical specifications which impleme
current rule and propose a new technical specification refer
NRC regulatory guide or, if the licensee desires, an alterna
implementation guidance. Implementation must await NRC revie
approval of the licensee's proposal. The NRC anticipates tha
communication will be issued shortly which will provide the
implementation procedure to all power reactor licensees.

Finding of No Significant Environmental Impact: Availabilit

The Commission has determined under the National Enviro Policy Act of 1969, as amended, and the Commission's regula Subpart A of 10 CFR Part 51, that this rule, if adopted, wo major Federal action significantly affecting the quality of environment, and therefore an environmental impact statemen required. There will be a marginal radiological environmenta offsite, and the occupational exposure onsite is expected t by about 0.8 person-rem per year of plant operation for pla if licensees adopt the performance-based testing scheme pro revised regulation. Alternatives to issuing this revision o regulation were considered. One alternative would also enta revisions to other NRC regulations and therefore the NRC ha pursue it separately in the future. A third alternative wou regulatory burden without a commensurate safety benefit and was found not to be acceptable. The environmental assessmen available for inspection or copying for a fee in the NRC Pu Document Room, 2120 L Street NW, (Lower Level), Washington, PDR's mailing address is Mail Stop LL-6, Washington, DC 205 (202) 634-3273; fax (202) 634-3343.

Paperwork Reduction Act Statement

This final rule amends information collection requireme subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3 seq.). These requirements were approved by the Office of Ma Budget, approval number 3150-0011.

Because the rule will relax existing information collec requirements by providing an option to the existing require public burden for this collection of information is expecte reduced by approximately 400 hours per licensee per year. T reduction includes the time required for reviewing instruct searching existing data sources, gathering and maintaining needed and completing and reviewing the collection of infor comments regarding the estimated burden reduction or any as collection of information, including suggestions for reduci burden, to the Information and Records Management Branch (T U.S. Nuclear Regulatory Commission, Washington, DC 20555-00 the Desk Officer, Office of Information and Regulatory Affa 10202, (3150-0011), Office of Management and Budget, Washin 20503.

Regulatory Analysis

The Commission has prepared a final regulatory analysis regulation. The analysis examines the costs and benefits of alternatives considered by the Commission. The analysis is a for inspection or copying for a fee in the NRC Public Docume 2120 L Street NW, (Lower Level), Washington, DC; the PDR's m address is Mail Stop LL-6, Washington, DC 20555; phone (202 fax (202) 634-3343.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 198 U.S.C. 605(b)), the Commission certifies that this rule wil promulgated, have a significant economic impact on a substa of small entities. This rule affects only the licensing and of nuclear power plants. The companies that own these plants fall within the scope of the definition of ``small entities in the Regulatory Flexibility Act or the Size standard adopt NRC (10 CFR 2.810).

Backfit Analysis

This final rule amends a current regulation by establis alternative requirements which may be voluntarily adopted by Therefore, the final rule does not constitute a backfit as d 10 CFR 50.109(a)(1). Therefore, a backfit analysis is not ne

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Criminal penalties, E protection, Incorporation by reference, Intergovernmental re Nuclear power plants and reactors, Radiation protection, Rea criteria, Reporting and recordkeeping requirements.

For the reasons set out in the preamble and under the au the Atomic Energy Act of 1954, as amended, the Energy Reorga Act of 1974, as amended, and 5 U.S.C. 552 and 553, the NRC :

the following amendments to 10 CFR Part 50.

PART 50--DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 is revised to read follows:

Authority: Secs. 102, 103, 104, 105, 161, 182, 183, Stat. 936, 937, 938, 948, 953, 954, 955, 956, as amende 83 Stat. 1244, as amended (42 U.S.C. 2132, 2133, 2134, 2232, 2233, 2236, 2239, 2282); secs. 201, as amended, 2 Stat. 1242, as amended, 1244 1246 (42 U.S.C. 5841, 5842

Section 50.7 also issued under Pub. L. 95-601, sec. 2951, as amended by Pub. L. 102-486, sec. 2902, 106 Sta U.S.C. 5851). Sections 50.10 also issued under secs. 10 Stat. 936, 955, as amended (42 U.S.C. 2131, 2235); sec. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.13, and 50.103 also issued under sec. 108, 68 Stat. 939, as U.S.C. 2138). Sections 50.23, 50.35, 50.55, and 50.56 a under sec. 185, 68 Stat. 955 (42 U.S.C. 2235). Sections 50.55a and Appendix Q also issued under sec. 102, Pub. Stat. 853 (42 U.S.C. 4332). Sections 50.34 and 50.54 al under sec. 204, 88 Stat. 1245 (42 U.S.C. 5844). Section 50.91, and 50.92 also issued under Pub. L. 97-415, 96 S U.S.C. 2239). Section 50.78 also issued under sec. 122, (42 U.S.C. 2152). Sections 50.80 50.81 also issued unde 68 Stat. 954, as amended (42 U.S.C. 2234). Appendix F a under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

2. Appendix J to 10 CFR Part 50 is amended by addin language between the title and the Table of Contents an language for Option B after Section V.B3.

Appendix J--Primary Reactor Containment Leakage Testing Power Reactors

This appendix includes two options, A and B, either be chosen for meeting the requirements of this appendix

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Option A--Prescriptive Requirements

* * * * *

Option B--Performance-Based Requirements

Table of Contents

I. Introduction

One of the conditions required of all operating lic
light-water-cooled power reactors as specified in Sec.
that primary reactor containments meet the leakage-rate
requirements in either Option A or B of this appendix.
requirements ensure that (a) leakage through these cont
systems and components penetrating these containments d
exceed allowable leakage rates specified in the Technic
Specifications and (b) integrity of the containment str
maintained during its service life. Option B of this ap
identifies the performance-based requirements and crite
preoperational and subsequent periodic leakage-rate tes

\3\ Specific guidance concerning a performance-base
program, acceptable leakage-rate test methods, procedur

analyses that may be used to implement these requiremen
criteria are provided in Regulatory Guide 1.163, ``Perf
Containment Leak-Test Program.''

II. Definitions

Performance criteria means the performance standard
which test results are to be compared for establishing
acceptability of the containment system as a leakage-li
boundary.

Containment system means the principal barrier, aft
reactor coolant pressure boundary, to prevent the relea
quantities of radioactive material that would have a si
radiological effect on the health of the public.

Overall integrated leakage rate means the total lea
through all tested leakage paths, including containment
valves, fittings, and components that penetrate the con
system.

La (percent/24 hours) means the maximum allowable l
at pressure Pa as specified in the Technical Specificat

Pa (p.s.i.g) means the calculated peak containment
pressure related to the design basis loss-of-coolant ac
specified in the Technical Specifications.

III. Performance-Based Leakage-Test Requirements

A. Type A Test

Type A tests to measure the containment system over
integrated leakage rate must be conducted under conditi
representing design basis loss-of-coolant accident cont
pressure. A Type A test must be conducted (1) after the
system has been completed and is ready for operation an
periodic interval based on the historical performance o
containment system as a barrier to fission product rele
reduce the risk from reactor accidents. A general visua
of the accessible interior and exterior surfaces of the
system for structural deterioration which may affect th

leak-tight integrity must be conducted prior to each te
periodic interval between tests based on the performanc
containment system. The leakage rate must not exceed th
leakage rate (La) with margin, as specified in the Tech
Specifications. The test results must be compared with
results to examine the performance history of the overa
containment system to limit leakage.

B. Type B and C Tests

Type B pneumatic tests to detect and measure local
across pressure retaining, leakage-limiting boundaries,
pneumatic tests to measure containment isolation valve
rates, must be conducted (1) prior to initial criticali
periodically thereafter at intervals based on the safet
significance and historical performance of each boundar
isolation valve to ensure the integrity of the overall
system as a barrier to fission product release to reduc
from reactor accidents. The performance-based testing p
contain a performance criterion for Type B and C tests,
consideration of leakage-rate limits and factors that a
of or affect performance, when establishing test interv
evaluations of performance of containment system compon
comparison to previous test results to examine the perf
history of the overall containment system to limit leak
tests must demonstrate that the sum of the leakage rate
pressure of Type B tests, and pathway leakage rates fro
tests, is less than the performance criterion (La) with
specified in the Technical Specification.

IV. Recordkeeping

The results of the preoperational and periodic Type
tests must be documented to show that performance crite
leakage have been met. The comparison to previous resul
performance of the overall containment system and of in
components within it must be documented to show that th
intervals established for the containment system and co
within it are adequate. These records must be available
inspection at plant sites.

If the test results exceed the performance criteria
defined in the plant Technical Specifications, those ex

must be assessed for Emergency Notification System repo
Secs. 50.72 (b)(1)(ii) and Sec. 50.72 (b)(2)(i), and fo
Event Report under Sec. 50.73 (a)(2)(ii).

V. Application

A. Applicability

The requirements in either or both Option B, III.A tests, and Option B, III.B for Type B and C tests, may a voluntary basis by an operating nuclear power reactor specified in Sec. 50.54 in substitution of the requirem those tests contained in Option A of this appendix. If requirements for tests in Option B, III.A or Option B, implemented, the recordkeeping requirements in Option B these tests must be substituted for the reporting requi these tests contained in Option A of this appendix.

B. Implementation

1. Specific exemptions to Option A of this appendix been formally approved by the AEC or NRC, accordin are still applicable to Option B of this appendix unless specifically revoked by the NRC.
2. A licensee or applicant for an operating license Option B, or parts thereof, as specified in Sectio Appendix, by submitting its implementation plan an revision to technical specifications (see paragrap the Director of the Office of Nuclear Reactor Regu
3. The regulatory guide or other implementation docu a licensee, or applicant for an operating license, performance-based leakage-testing program must be general reference, in the plant technical specific submittal for technical specification revisions mu justification, including supporting analyses, if t chooses to deviate from methods approved by the Co endorsed in a regulatory guide.
4. The detailed licensee programs for conducting tes Option B must be available at the plant site for N

Dated at Rockville, Maryland this 20th day of

For the Nuclear Regulatory Commission.

John C. Hoyle,

Secretary of the Commission.

[FR Doc. 95-23803 Filed 9-25-95; 8:45 am]
BILLING CODE 7590-01-P

Notices For 2008 2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995 1994